

REMARKS/ARGUMENTS

Reconsideration and allowance in view of the following remarks are respectfully requested.

Claims 1-8, 10, 11, and 17-28 were pending for examination but rejected in the last office action. Independent claims 1 and 11 have been amended. New independent claims 31 and 33, and dependent claims 29, 30, 32, and 34 have been added. Therefore, claims 1-8, 10, 11, and 17-34 are now pending for further examination.

Claims 1, 3, 10-11, 15-17, 19-20, and 22 were rejected under 35 USC 102(b) as being anticipated by Isozumi et al. Applicant respectfully traverses this rejection.

Anticipation under Section 102 of the Patent Act requires that a prior art reference disclose every claim element of the claimed invention. See, e.g., Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1574 (Fed. Cir. 1986). While other references may be used to interpret an allegedly anticipating reference, anticipation must be found in a single reference. See, e.g., Studiengesellschaft Kohle, G.m.b.H. v. Dart Indus., Inc., 726 F.2d 724, 726-27 (Fed. Cir. 1984). The absence of any element of the claim from the cited reference negates anticipation. See, e.g., Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 715 (Fed. Cir. 1984). Anticipation is not shown even if the differences between the claims and the prior art reference are insubstantial and the missing elements could be supplied by the knowledge of one skilled in the art. See, e.g., Structural Rubber Prods., 749 F.2d at 716-17.

Independent claim 1, as now amended, requires that:

at every point along the length of the filter section the tubular fluid passage has a cross-sectional area that is equivalent to or smaller than a summation of cross-sectional areas of all of the holes

of the filter section, so that fluid flow is regulated through the tubular fluid passage (Emphasis supplied.)

Currently amended claim 11 includes the same limitation. Support for this limitation may be found for example at pages 10 and 11 of the specification and in Figure 2.

In the structure defined by each of claims 1 and 11, fluid flow is regulated through the tubular fluid passage, instead of the holes. Therefore, precise manufacturing of each hole is not strictly required, so that the pressure drop throughout the filter can be easily regulated. Consequently, in the configuration defined by amended claims 1 and 11, variations in the performance of the injector and the engine can be easily reduced.

In contrast, Isozumi fails to disclose the above limitations of claims 1 and 11. In Isozumi, referring to FIGS. 1 and 4, the filter body 27 is tapered in a generally conical shape, and the bore 20 is not tapered. The space between the filter body and the bore becomes larger toward the outlet on the left side in FIG. 1 along the filter body. Isozumi does not specifically define the relationship between the cross-sectional areas of the tubular fluid passage and the holes of the filter section. Accordingly, in Isozumi, the space between the filter body and the bore on the left side in FIG. 1 may be greater than the summation of cross-sectional areas of all of the holes of the filter section. In this case, the fluid flow is at least partially regulated through the holes, and variations in the sizes of the holes will influence fluid flow through the filter. Consequently, variations in the sizes of the holes will cause variations in the performance of the filter.

In addition, the intent of Isozumi is to determine the size of each square opening in a way that will prevent clogging from freezing, and the square opening (filter opening) is a dominant factor regulating the amount of fuel injected into the engine. Thus, the object, configuration, and feature of Isozumi are different from that defined by currently amended claims 1 and 11.

In view of the foregoing, it is respectfully submitted that the invention defined in amended claims 1 and 11 and the claims that depend from it are not anticipated by Isozumi et al.

Claims 2, 18, and 21 were also rejected under 35 USC 103(a) as being unpatentable over Isozumi in view of Shinpo.

Shinpo (JP '316) teaches a filter which consists of porous silica having a controlled pore diameter. As such, JP '316 teaches a filter that is a completely different composition and configuration than Isozumi. Indeed, not only does JP '316 relate to a porous silica filter as opposed to a open holed mesh filter as taught by Isozumi, but JP '316 provides a filter having a cylindrical shape which also differs from the conical design of Isozumi.

The Examiner asserts that it would be obvious to adopt the hemispherically shaped closed end of JP '316 in Isozumi. Applicant respectfully disagrees. Firstly, JP '316 does not teach a "hemispherically-shaped" closed end. In this regard, although JP '316 mentions that one end of the filter tube is sealed, there is no teaching that the sealed end is extensive enough so as to define a "hemispherically-shaped" closed end much less that there would be a reason to provide such a shaped end in Isozumi. Indeed, as noted above, Isozumi teaches no particular function of his closed end nor significance to the shape thereof. Likewise, JP '316 appears to have a rounded end simply because the filter is formed from porous silica that must be sealed at the end for the end to be closed. Because Isozumi does not relate to a porous silica structure, there is absolutely no reason whatsoever to reshape the end of Isozumi's filter to be hemispherical, much less to form the side walls thereof to define a constant cross-sectional area for the tubular passage way. Because the structural make up and composition of each of these two filters is different, the skilled artisan would not piecemeal select isolated characteristics of JP '316 and incorporate them in Isozumi.

Section 103 does not allow the Examiner to engage in picking and choosing from the prior art only to the extent that it will support a holding of obviousness, while excluding parts of the prior art essential to the full appreciation of what the prior art suggests to one of ordinary skill in the art. In re Wesslau, 147 USPQ 391 (CCPA 1975).

As the CAFC has said, obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. ACS Hospital Systems v Montefiore Hospital, 221 USPQ 929, 933 (Fed. Cir. 1984). There must be a suggestion in the art relied upon to use what one reference discloses in or in combination with the disclosure of the other reference or references relied upon by the Examiner. In re Grabiak, 226 USPQ 870, 872 (Fed. Cir. 1986).

Thus, it is submitted that the skilled artisan would adopt Isozumi or JP '316 in the alternative and would not be motivated to adopt a piecemeal combination of their structures.

It is further respectfully noted that JP '316 fails to teach or describe any relationship between the cross-sectional area of the tubular fluid passage and the summation of cross-sectional areas of the pores/holes. Thus, JP '316 does not overcome the deficiencies of Isozumi noted above.

In summary, Isozumi and JP '316 do not motivate the skilled artisan to produce the feature of the presently amended claims 1 and 11 in which the tubular fluid passage regulates the fluid flow thereby enhancing performance of the injector. It is therefore respectfully submitted that claims 1 and 11 and the claims that depend therefrom are not anticipated by Isozumi and not obvious over Isozumi in view of JP '316

Claims 4-8, 13 and 23-28 were rejected under 35 USC 103(a) as being unpatentable over Isozumi in view of Neuman. Applicant respectfully traverses this rejection.

As noted above, Isozumi provides a filter wherein a mesh defines the filtering side wall of the filter. The simple filter mesh has square openings and the focus of Isozumi is the appropriate size of the sides of such openings.

The reference to Neuman cited by the Examiner teaches shaped filter openings defined through a metal side wall. Because Isozumi provides a filter mesh for his filter and teaches in great detail the criticality the size of his filter mesh holes, it is respectfully submitted that it would not be obvious for the skilled artisan to abandon Isozumi's invention and provide instead shaped bores as taught by Neuman. The Neuman shaped bores are not provided as a mesh, are not square in shape, and there is certainly no teaching in Neuman of how shaped bores could be provided in a simple mesh of the type Isozumi discloses. It is therefore respectfully submitted that the skilled artisan would not modify Isozumi in view of Neuman, but would select one of these two structures in the alternative.

Claims 2, 18, 21, 23, and 26 were rejected under 35 USC 103(a) as being unpatentable over Isozumi in view of Stamstad. Applicant respectfully traverses these rejections.

Stamstad discloses a filter having a hemispherically-shaped closed end defining the fluid passage. However, Stamstad fails to teach or describe the relationship between the cross-sectional area of the tubular fluid passage and the summation of cross-sectional areas of all of the holes in a filter-section.

Thus, currently amended claims 1 and 11 and the claims that depend from present claims 1 and 11 are not anticipated by Isozumi, and are not obvious over Isozumi in view of Stamstad.

Each of new claims 31 and 33, as now amended, requires that:

at a point in a flow direction *downstream of the most*
downstream one of the holes of the filter section the tubular fluid

passage has a cross-sectional area that is equivalent to or smaller than a summation of cross-sectional areas of all of the holes of the filter section (Emphasis supplied.)

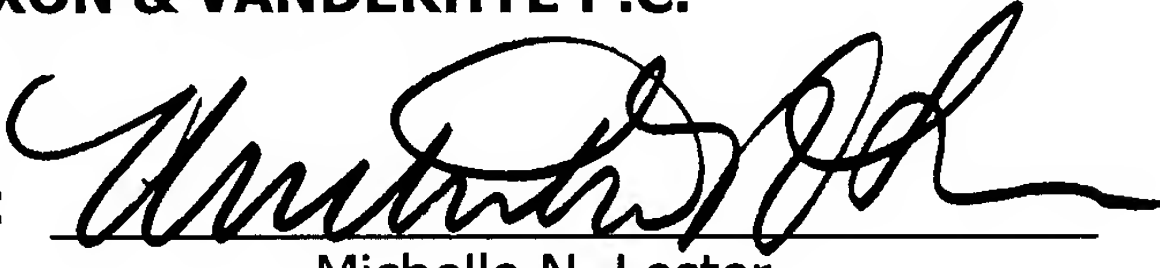
This configuration is described at pages 10 and 11 of the specification and with reference to Fig. 2, in which the filter has an outer diameter d_2 at a point downstream of the most downstream of the filter holes, and the bore has an inner diameter D at that same location. As the specification explains, D and d_2 are selected so that the cross-sectional area of the flow passage between the filter and the bore is equal to or less than the sum of the cross-sectional areas of all of the holes of the filter section.

Each structure defined by claims 31 and 33 also has features similar to those of amended claims 1 and 11, and new claims 31 and 33 are therefore patentable over the cited references Isozumi, Shinpo, Newman, and Stamstad for at least the reasons presented above.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and an early Notice to that effect is earnestly solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
Michelle N. Lester
Reg. No. 32,331

MNL:slj
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100